UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF OHIO
EASTERN DIVISION (YOUNGSTOWN)

In RE FREDDIE MAC SECURITIES LITIGATION	: : : : :	Civil Action No. 4:08-cv-160 CLASS ACTION

EXPERT REPORT OF DR. GREG HALLMAN

August 16, 2012

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I. Introduction

1. I have been retained by counsel for the class plaintiffs in the Freddie Mac Securities Litigation to provide an opinion on the efficiency of the market for Freddie Mac common stock during the class period starting 8/1/2006 and ending 11/20/2007 (inclusive). This expert report contains my opinion on the efficiency of the market in which Freddie Mac Common stock traded during the class period.

II. Qualifications

2. I am a Senior Lecturer in the Department of Finance at the McCombs Graduate School of Business at the University of Texas at Austin, where I teach graduate-level courses in valuation, corporate finance, investment theory, and real estate finance, and serve as Director of the McCombs MBA REIT Fund and Director of the McCombs Master of Science in Finance (MSF) Program. I also serve on the Advisory Committee of the McCombs MBA Investment Fund. I have won numerous teaching awards for my MBA finance classes at McCombs, including the Joe D. Beasley Award for MBA Teaching, the award for Best MBA Core Professor, and numerous selections to the MBA Teaching Honor Roll. Prior to joining the faculty at the University of Texas in 2002, I was a Managing Director in the Silicon Valley office of Intecap, Inc., an economic consulting firm purchased by Charles River Associates in 2004. I am currently a Senior Consultant with Charles River Associates, although Charles River Associates is not working with me on this matter. I have worked as a consultant on litigation matters for the past sixteen years, and I have analyzed and calculated securities and valuation-related damages numerous times in my career both as a testifying expert and as support to a

testifying expert. I have an MBA in Finance from Tulane University and a Ph.D. in Finance from the University of Texas at Austin. A copy of my current curriculum vitae (CV) is in Exhibit 1, which includes my professional presentations and publications, along with a complete listing of my prior testimony.

III. Summary of Opinion

3. Based on my evaluation of the market in which Freddie Mac common stock traded, it is my opinion that the market for Freddie Mac common stock was semi-strong form efficient during the class period 8/1/06 – 11/20/07. In the course of my analysis I examined factors related to the structural characteristics of the market in which Freddie Mac common stock traded described in the *Cammer* and *Krogman* decisions, as well as the cause-and-effect relationship between major earnings announcements and price changes in Freddie Mac stock during the class period. This analysis informs and supports my conclusion that trading in Freddie Mac common stock was semi-strong form efficient during the class period in this matter.

IV. Background

4. The Federal Home Loan Mortgage Corporation ("Freddie Mac") is a stockholder-owned company chartered by Congress in 1970 to stabilize the nation's residential mortgage markets and expand opportunities for homeownership and affordable rental housing.[1] The Federal Home Loan Mortgage Corporation operates under the name "Freddie Mac,"

[1] Freddie Mac 2006 Annual Report at 1.

and the company is referenced by that name in this report. Freddie Mac purchases residential mortgages and mortgage-related securities in the secondary mortgage market.

5. I understand plaintiffs in this matter allege that "Throughout the Class Period, Defendants made a series of materially false and misleading public statements relating to, among other things, (i) its [Freddie Mac's] exposure to or risk of loss from subprime mortgage loans and other nontraditional, high risk mortgages, including 'Alt-A' mortgages [...]; (ii) its underwriting guidelines and Defendants' adherence to those guidelines, (iii) its loan analysis software and fraud detection systems, (iv) its risk management measures and its risk management performance, and (v) its capital position."[2]

6. I understand the Class Period in this matter starts on 8/1/2006 and ends on 11/20/2007, inclusive.[3]

V. Methodology and Bases for Opinion on Market Efficiency

7. I understand that established case law suggests factors to be considered when determining the efficiency of the market for a given security.[4] These *Cammer* and *Krogman* factors include: (1) the average weekly trading volume expressed as a percentage of total outstanding shares; (2) the number of securities analysts following and reporting on the stock; (3) the extent to which market makers and arbitrageurs trade in the stock; (4) the company's eligibility to file SEC registration Form S-3 (as opposed

[2] Ohio Public Employees Retirement System v. Federal Home Loan Mortgage Corporation a/k/a Freddie Mac et. al, Third Amended Complaint, February 28, 2012 at ¶2.

[3] Ohio Public Employees Retirement System v. Federal Home Loan Mortgage Corporation a/k/a Freddie Mac et. al, Third Amended Complaint, February 28, 2012 at ¶13.

[4] *Cammer v. Bloom*, 711 F. Supp. 1264, 1286-87 (D.N.J.1989); *Krogman v. Sterritt*, 202 F.R.D. 467, 477-78 (N.D. Tex. 2001).

to Form S-1 or S-2); (5) the existence of empirical facts "showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price"; (6) the company's market capitalization; (7) the bid-ask spread for stock sales; and (8) float, the stock's trading volume without counting insider-owned stock.[5] The *Cammer* and *Krogman* factors are consistent with my knowledge and understanding of financial markets and the academic literature regarding market efficiency.

8. Much academic literature on market efficiency provides evidence that the major stock markets in the U.S. are semi-strong form efficient. Additionally, the efficient market hypothesis and the idea that large stocks traded on the major exchanges (NYSE and NASDAQ) are semi-strong form efficient is taught in MBA finance textbooks used at virtually every major business school in the U.S.[6] A semi-strong form efficient market is a market in which stock prices reflect all publicly-available information, and stock prices react quickly to new material information (news) regarding stock value.

9. In their section on market efficiency, Parrino et. al.[7] discusses the underlying concepts of operational efficiency and informational efficiency.

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[5] As summarized in *Unger v. Amedisys Inc.* 401 F.3d 316, 323 (5th Cir. 2005)

[6] Standard MBA finance textbook treatment and evidentiary support for semi-strong form efficiency can be found in the following widely used finance textbooks: (1) Corporate Finance, Ross, Westerfield, Jaffe, Ninth edition, Chapter 14 (which includes the following statement in the summary section regarding market efficiency, page 460, point 4., "Much evidence from different financial markets supports weak form and semistrong form efficiency but not strong form efficiency.");
(2) Investments, Bodie, Kane, Marcus, Ninth Edition, (which includes the statement at page 373, "We conclude that markets are generally very efficient, but that rewards to the especially diligent, intelligent, or creative may in fact be waiting");
(3) Fundamentals of Corporate Finance, Parrino, Kidwell, and Bates, Second Edition, Chapter 2, pages 33, 34 (which contains the following sentences at page 34 regarding semistrong-form efficiency, "The concept of semistrong-form efficiency is a reasonable representation of the public stock markets in developed countries such as the United States. In a market characterized by this sort of efficiency, as soon as information becomes public, it is quickly reflected in stock prices through trading activity."). Two pages from the Parrino et. al. textbook that provide a reasonable summary of the market efficiency issue are attached to this report as Exhibit 2.

[7] Fundamentals of Corporate Finance, Robert Parrino, David Kidwell, Thomas Bates, John Wiley & Sons, copyright 2012, second edition, page 33.

> The overall efficiency of a market depends on its *operational efficiency* and its *informational efficiency*. **Market operational efficiency** focuses on bringing buyers and sellers together at the lowest possible cost. The costs of bringing buyers and sellers together are called *transaction costs* and include such things as broker commissions and other fees and expenses. The lower these costs, the more operationally efficient markets are. Why is operational efficiency important? If transaction costs are high, market prices will be more volatile, fewer financial transactions will take place, and prices will not reflect the knowledge and expectations of investors as accurately.
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> Markets exhibit **informational efficiency** if market prices reflect all relevant information about securities at a particular point in time. As suggested above, informational efficiency is influenced by operational efficiency, but also depends on the availability of information and the ability of investors to buy and sell securities based on that information. In an informationally efficient market, market prices adjust quickly to new information as it becomes available. Prices adjust quickly because many security analysts and investors are gathering and trading on information about securities in a quest to make a profit. Note that competition among investors is an important driver of informational efficiency.

10. In large part, the *Cammer* and *Krogman* factors examine the operational efficiency and the informational efficiency of the market in which a stock trades. The *Cammer* and *Krogman* analysis focuses on the availability of information and the existence of a market and trading mechanism for getting information into stock prices. I examine the *Cammer* and *Krogman* factors as they relate to the existence of a (semi-strong) efficient market for Freddie Mac common stock in the following sections.

i) Trading Volume

11. Among the structural indicators of likely efficiency is the volume of trading in a particular security. The *Cammer* decision states that, "Turnover measured by average weekly trading of two percent or more of the outstanding shares would justify a strong presumption that the market for the security is an efficient one."[8] Per *Cammer*, a large

[8] *See Cammer v. Bloom*, 711 F. Supp. 1264, 1286 (D.N.J. 1989).

volume of weekly stock trades implies an efficient market in that many investors use corporate information as a basis for executing trades.[9] The average daily turnover rate for Freddie Mac calculated using reported volume over the entire class period was 0.61 percent.[10] This average daily turnover rate over the class period implies a weekly turnover rate based of 3.05 percent (i.e., 5 x 0.61% = 3.05%). The average weekly turnover rate of 3.05% is above the 2% level cited in *Cammer* as justifying a "strong presumption" of efficiency. Thus, trading volume over the class period supports a finding that the market for Freddie Mac common stock was (semi-strong form) efficient.

ii) Security Analysts

12. The *Cammer* decision states, "it would be persuasive to allege a significant number of securities analysts followed and reported on a company's stock during the class period."[11] *Cammer* goes on to state that the existence of analysts implies that company reports were closely reviewed and interpreted by investment analysts, who would make recommendations to investors based on the information contained in such reports.[12] I have identified analyst coverage of Freddie Mac from Bear Sterns, Prudential Equity Group, Credit Suisse, Morgan Stanley, Fox-Pitt Kelton, JP Morgan, Piper Jaffray, Fitch IBCA, National Australia Bank Limited, Barclays, Citi, and UBS Research published during the class period. Contemporary news reports summarized the buy/sell/hold

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[9] *See id.* p. 1286.

[10] Volume data as reported by Bloomberg. The average daily volume during the class period was 3,997,309 shares. The total volume during the class period was 1,319,111,849 shares.

[11] *See Cammer v. Bloom*, 711 F. Supp. 1264, 1286 (D.N.J. 1989).

[12] *See Cammer v. Bloom*, 711 F. Supp. 1264, 1286 (D.N.J. 1989).

recommendations of 17 analysts on Freddie Mac during the class period.[13] Freddie Mac was also very closely followed by the press during the class period in this matter. A Westlaw search on Freddie Mac returned over 13,000 articles referencing the company in the title or lead paragraph during the class period. This level of security analyst and press coverage supports a finding that the market for Freddie Mac was (semi-strong form) efficient.

iii) Market Makers and Arbitrageurs

13. The *Cammer* decision observes that, "[t]he existence of market makers and arbitrageurs would ensure completion of the market mechanism; these individuals would react swiftly to company news and reported financial results by buying or selling stock and driving it to a changed price level."[14] During the class period Freddie Mac stock was traded on the NYSE. The NYSE system facilitates trades through a market-making specialist for each listed stock. The NYSE market is viewed as well-functioning and efficient, and NYSE-listed companies include such household names as General Electric, Wal-Mart and IBM. There was a minimum of 12.4 million Freddie Mac common shares sold short on the NYSE during the class period, indicating the presence of arbitrage activity with investors taking positions on both sides of the stock. Filings with the SEC show call and put options on Freddie Mac stock were held during the class period by investors such as the Goldman Sachs Group and JP Morgan Chase & Co, also indicating the presence of arbitrage activity with investors in the options market taking positions on both sides of the stock. Filings with the SEC show Freddie Mac common

[13] Nelson Research Reports "FREDDIE MAC Consensus Recommendation: HOLD," 1/9/07.

[14] *Cammer v. Bloom*, 711 F. Supp. 1286, 1287. (D.N.J. 1989).

stock was held by large institutional holders such as Vanguard Group and Wellington Management Company during the class period. During the class period, Freddie Mac was listed in the Standard and Poor 500, an index of 500 leading companies in leading industries of the U.S. economy, and one of the most widely followed and traded indexes in the market. Membership in a major exchange using a specialist system such as the NYSE, the presence of short interest and options indicating investor positions and interest on both sides of the stock, ownership by institutional investors, and membership in a major market index such as the S&P 500, all support a finding that the market for Freddie Mac common stock was (semi-strong form) efficient during the class period in this matter.

iv) Form S-3 Eligibility

14. The *Cammer* court found that "it would be helpful to allege the Company was entitled to file an S-3 Registration Statement in connection with public offerings or, if ineligible, such ineligibility was only because of timing factors rather than because the minimum stock requirements set forth in the instructions to Form S-3 were not met. Again, it is the number of shares traded and value of shares outstanding that involve the facts which imply efficiency."[15] At the time of *Cammer*, the filing of a Form S-3 registration statement required firms to file reports under the Securities Exchange Act of 1934 for three years prior to the Form S-3 filing and to have $150 million of stock held by non-affiliates (or $100 million of stock held by non-affiliates coupled with annual trading

[15] *See id.* p. 1288.

volume of three million shares per year).[16] The SEC has since modified the requirements for filing a Form S-3. Among the current requirements for filing a Form S-3 registration statement are that a company be organized and operating under the laws of the United States or its territories, has filed reports under the Exchange Act for twelve calendar months, has suffered no default of its obligations and has an aggregate market value of common equity held by non-affiliates of $75 million or more.[17]

15. The value of Freddie Mac's common stock held by non-affiliates during the Class Period was approximately $39.1 billion.[18] This value is significantly higher (over 500X higher) than the $75 million threshold requirement of the S-3. However, Freddie Mac was not eligible to register an S-3 during the class period because it did not meet the requirement of having filed reports under the Exchange Act. Freddie Mac, a Government-Sponsored Enterprise, had a statutory exemption from filing reports under the Exchange Act.[19] Also, in 2003, Freddie Mac's independent auditors had identified "Material Weaknesses" in the Freddie Mac's internal controls.[20] Freddie Mac worked during the class period toward remediating those material weaknesses and establishing a history of filing timely

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[16] *See id.* p. 1271.

[17] *See* SEC 1379, "Form S-3, Registration Statement under the Securities Act of 1933, General Instructions," as revised August 2001.

[18] According to its May 7, 2007 proxy statement, on April 2, 2007 Freddie Mac had 661.1 million common shares held by investors other than insiders. The closing stock price of Freddie Mac common stock on April 2, 2007 was $59.13.

661.1 million x $59.13 = $39,092 million.

[19] Freddie Mac 2006 Annual Report, p 1.

[20] "In connection with their ongoing audits of the restatement of the previously issued financial statements and the company's 2002 financial statements, PwC has identified and communicated to management and the Audit Committee that 'material weaknesses' (as defined under standards established by the American Institute of Certified Public Accountants) in internal controls existed during the time periods covered by the restated financial statements." Freddie Mac Press Release, "Freddie Mac Announces Restatement Results," November 21, 2003.

quarterly reports in order to qualify for SEC registration.[21] Freddie Mac released financial "Information Statements" in lieu of Exchange Act reports which contained, among other things, the company's revenue, operating profit, debt payments, net income, and credit losses and estimated credit and interest rate risk exposure. Analysts and the financial press reported this information about Freddie Mac's financial performance, financial condition, and expectations regarding future performance, and used this information in their financial analysis and financial projections of the company.

16. While Freddie Mac did not meet the full eligibility requirements of S-3 registration during the class period in this matter, meeting the minimum size requirements of the S-3 registration form supports a finding that the market for Freddie Mac common stock was (semi-strong form) efficient during the class period. Throughout the class period, Freddie Mac filed financial information statements, issued press releases, and conducted and participated in earnings calls with stock analysts and investors, and the information contained in these releases was used by equity analysts as the basis for their research pieces, stock valuation, and financial projections of the company.

v) Event Study

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[21] "The material weaknesses and significant deficiencies in our internal control over financial reporting adversely affect our ability to record, process, summarize and report financial data in a timely manner. Based on the continued existence of material weaknesses at December 31, 2006, our Chief Executive Officer and Chief Financial Officer have concluded that our internal control over financial reporting was not effective at December 31, 2006. In order to compensate for the material weaknesses and other deficiencies in our internal controls, we continue to perform extensive verification and validation procedures to provide reasonable assurance that our consolidated financial statements are prepared in accordance with GAAP. Therefore, in view of the additional procedures we performed, we believe that these weaknesses do not prevent us from preparing and issuing our consolidated financial statements in conformity with GAAP.

Our resumption of interim financial reporting will depend on continued progress with our remediation efforts; however, our objective is to return to quarterly reporting during the second half of 2007. We will begin the process of registering our common stock with the SEC after resuming timely quarterly reporting." Freddie Mac 2006 Annual Report, page 59.

17. The *Cammer* court examines the existence of empirical facts "showing a cause and effect relationship between unexpected corporate events or financial releases and an immediate response in the stock price" when considering the efficiency of a stock. We examine this factor using an event study analysis around the six earnings releases made by Freddie Mac during the class period. Event study analysis is a widely accepted, peer-reviewed method for calculating the effect of an event on the value of the stock of a company.[22]

18. An event study analysis consists of first determining a statistical model (the "market model") to predict the normal or expected return on the stock given market returns, then using the model to measure abnormal performance (i.e., abnormal price movement). The event study can isolate that part of the stock-price change related only to the Freddie Mac-specific news and unrelated to market news and effects on the examined date. The standard event study methodology is well suited to analyze the stock price reaction around Freddie's earnings announcements during the class period to test for a cause and effect relationship between financial news releases and stock returns, because earnings announcements are events where Freddie Mac releases new financial information to the market.

19. To estimate the parameters of the statistical market model used to study Freddie Mac stock movements around the earnings release dates, we use daily returns on Freddie Mac and the S&P 500 and an estimation period starting August 1, 2005, and running through

[22] David I. Tabak, PhD, and Frederick C. Dunbar, PhD, "Materiality and Magnitude: Event Studies in the Courtroom", Litigation Services Handbook – The Role of the Financial Expert, Third Edition, Edited by Roman L. Weil, Michael J. Wagner, and Peter B. Frank, John Wiley & Sons, 2001.

July 31, 2006. There are a total of 252 trading days in the estimation period. The estimated statistical model shows good overall fit measures with a statistically significant F-statistic, indicating a statistically significant relation between the returns of Freddie Mac common stock and the returns of the market. This statistically significant market-model relation itself supports a finding that the market for Freddie Mac common stock was (semi-strong form) efficient, as it implies that the price of Freddie Mac stock rapidly incorporated information about prospects for the U.S. economy and U.S. equities as a whole during the control period. A model estimated over the class period is similarly statistically significant, supporting the finding that the market for Freddie Mac common stock efficiently processed news into returns and was (semi-strong form) efficient during the class period.

20. Following the language in *Cammer*, we analyzed six financial releases made by Freddie Mac during the class period. These releases are summarized in Table 1 below and discussed in the following paragraphs. The results of our event study analysis show that Freddie Mac stock reacted quickly and logically (in the expected direction) to each of the six earnings releases studied, and the stock price reaction on these important financial information release dates supports the finding that the market for Freddie Mac stock was semi-strong form efficient.

Table 1

Calendar Date	News Vs. Expectations	Abnormal Return	one-tail p	Release Title	Period Covered
10/3/06	Positive	1.2%	11.9%	"Freddie Mac Provides Market Update"	H1 06
1/5/07	Weakly Negative	-1.0%	16.3%	"Freddie Mac Provides Quarterly Market Update"	Q3 06
3/23/07	In-Line	0.2%	44.2%	"Freddie Mac Reports 2006 Financial Results"	2006
6/14/07	Negative	-1.3%	10.7%	"Freddie Mac Releases First Quarter 2007 Financial Results; Company Resumes Quarterly Reporting"	Q1 07
8/30/07	Negative	-4.7%	0.0%	"Freddie Mac Releases Second Quarter 2007 Financial Results; Net Income of $764 Million, Fair Value Increase of $800 Million"	Q2 07
11/20/07	Negative	-29.0%	0.0%	"Freddie Mac Reports Third Quarter 2007 Net Loss of $2.0 Billion or $3.29 Per Diluted Share"	Q3 07

21. <u>10/3/06</u> - The morning of October 3, 2006, Freddie Mac released a "market update" for the first half of 2006. The release stated "Management's current estimate of net income for the first half of the year is approximately $2.7 billion. [...] Management expects to report the company's net income for the first half to have benefited significantly from mark-to-market gains recorded for its guarantee asset and derivatives, as interest rates increased during the first half of the year." Prudential Equity released a report on this date titled "GAAP Earnings Surpass Our Expectations Due to Higher Rates in 2Q (since reversed); Stable Outlook on Credit and Interest Rate Risks." The report stated, "GAAP net income of $2.7 billion (or $2.6 billion excluding one-time tax benefit) for 1H06 substantially exceeded our forecast of $1.6 billion. While the company did not provide full detail, we suspect the main earnings drivers benefited from higher interest rates, in-line margin, and better-than-expected credit losses offset by continuing higher-than-

expected operating expenses." This unexpected positive news caused the price of Freddie Mac common stock to increase 1.2% more than predicted by the market model, and this timely and logical stock price reaction to better-than-expected financial results is consistent with an efficient market.

22. 1/5/07 - The morning of January 5, 2007, Freddie Mac released a "market update" for the third quarter of 2006. The released stated "For the third quarter, the company estimates a net loss of approximately $550 million, compared to net income of $880 million for the third quarter of 2005. [...] the company expects to report a loss in net income for the fourth quarter..." The *Wall Street Journal* headlined its story about the release "Freddie Mac Warns of a Loss, Citing Drop in Interest Rates." The *New York Times* characterized the third quarter results as "in line with analysts' expectations," but noted, "For the fourth quarter, Freddie Mac also expects to report a loss." The analyst at Fox-Pitt, Kelton characterized this release as "weak" with an "uninspiring outlook" and noted that Freddie Mac's guidance for the timing of year-end financial reporting was later than expected. This unexpected negative news caused the price of Freddie Mac common stock to decrease 1.0% more than predicted by the market model, and this timely and logical stock price reaction to an announcement of poor financial results and a warning of poor future financial results is consistent with an efficient market.

23. 3/23/07 - The morning of March 23, 2007 Freddie reported its full-year 2006 financial results. The release stated "Freddie Mac (NYSE:FRE) today reported net income of $2.2 billion for 2006, up 4 percent compared to $2.1 billion in 2005 [...] As a result of the interest-rate movements in the last quarter, Freddie Mac reported a net loss of $480 million in the fourth quarter of 2006." These earnings were in line with expectations, as

the analyst at Fox-Pitt Kelton had noted in January "FRE expects to post a loss in 4Q06, however, we expect the company to post positive earnings for the full year 2006." Bear Sterns stated "FRE reported a GAAP loss in Q4 as anticipated."[23] One commenter at the Motley Fool characterized the release as "One step forward, one step back," noting the gain for the year and the loss for the quarter.[24] During the analyst call following the release Freddie Mac CFO Anthony Piszel stated, "we have little to no exposure to the subprime risk layered mortgage products." This statement was echoed in analyst coverage such as that of Bear Sterns, who stated, "Freddie Mac's exposure to high risk mortgages is quite low."[25] Freddie Mac stock increased 0.2% more than predicted by the market model in response to the financial releases on this day, and this muted stock price reaction is logical based on the fact that the information released in this earnings statement was expected by at least some market participants. Additionally, the muted stock price reaction to an announcement containing information that Freddie Mac did not have significant exposure to subprime credit risk is consistent with the idea that the market did not believe that Freddie Mac had significant subprime credit exposure, and was therefore not surprised to hear Freddie Mac's CFO say that they did not have any significant subprime credit exposure.

24. 6/14/07 - The morning of June 14, 2007, Freddie Mac reported its first quarter 2007 financial results. The release stated, "Freddie Mac (NYSE:FRE) today reported a net loss of $211 million, or $0.46 per diluted common share, in the first quarter of 2007, compared to net income of $2.0 billion, or $2.80 per diluted common share, for the same

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[23] "Freddie Mac Releases 2006 Financials, Now Even Closer to Being Current" Bear Sterns, 3/23/07

[24] Caplan, S.J. "Freddie Mac's Two Left Feet" Motley Fool, March 26, 2007

[25] "Freddie Mac Releases 2006 Financials, Now Even Closer to Being Current" Bear Sterns, 3/23/07

period in 2006." The company also reported resuming quarterly reporting of financial results. Reuters reported, "Freddie Mac FRE.N, the No. 2 U.S. mortgage finance company, on Thursday reported an unexpected first-quarter loss, as rising interest rates hurt the value of hedges it holds to protect profits on its mortgage portfolio."[26] Reuters also reported that analysts expected a positive result for the quarter. This unexpected negative news caused the price of Freddie Mac common stock to decrease 1.3% more than predicted by the market model, and this timely and logical stock price reaction to worse-than-expected financial results is consistent with an efficient market.[27]

25. <u>8/30/07</u> - The morning of August 30, 2007, Freddie Mac reported its second quarter 2007 financial results. The release stated, "Freddie Mac (NYSE:FRE) today reported second quarter net income of $764 million, or $1.02 per diluted common share, compared to net income of $1.4 billion, or $1.93 per diluted common share, for the same period in 2006. […] Credit-related expenses, consisting of provision for credit losses and real estate owned (REO) operations expense, were $336 million for the second quarter of 2007, compared to $63 million for the second quarter of 2006." The *Financial Times* characterized the cause of Freddie Mac's reduction in profit as unexpected, stating "The decline reflected higher-than-expected credit losses on mortgages originated in 2006 and 2007, which Freddie Mac attributed to a jump in foreclosures amid the 'deteriorating housing environment'."[28] The analyst with National Australia Bank noted, "the jump in Freddie's credit provisions were (approximately) twice as sever [*sic*] than what we saw from the large bank 2Q results, and the losses on

[26] Adler, Lynn "UPDATE 3-Freddie Mac posts loss as mortgage market soured" Reuters, June 14, 2007 1:39pm EDT

[27] Freddie Mac also issued a $0.47 dividend on this date. The returns analyzed here were adjusted for that payment.

[28] Saskia Scholtes et al. "Freddie Mac profits plunge" Financial Times, August 30, 2007

credit guarantees and loans purchased which combined were of a greater magnitude (for Freddie and probably for Fannie Mae as well) should also be a concern for the banking and investment banking sectors."[29] This unexpected negative news caused the price of Freddie Mac common stock to decrease 4.7% more than predicted by the market model, and this timely and logical stock price reaction to worse-than-expected financial results is consistent with an efficient market.

26. 11/20/07 - The morning of November 20, 2007, Freddie Mac reported its 3rd quarter 2007 financial results. The release stated, "Freddie Mac (NYSE:FRE) today reported a net loss of $2.0 billion, or $3.29 per diluted common share, in the third quarter of 2007, compared to a net loss of $715 million, or $1.17 per diluted common share, for the same period in 2006." Reuters characterized this release as unexpected, stating, "Freddie Mac FRE.N, the No. 2 U.S. mortgage finance company, on Tuesday stunned Wall Street with a unexpectedly wide loss and plans to slash its dividend or use other means to raise capital to withstand a continuing downturn in the housing market."[30] This unexpected negative news caused the price of Freddie Mac common stock to decrease 29.0% more than predicted by the market model, and this timely and logical stock price reaction to much-worse-than-expected financial results is consistent with an efficient market.

27. Statistical significance of abnormal returns around financial information release dates is not a requirement of either *Cammer* or *Krogman*. The question in *Cammer* as to whether or not there is a cause-and-effect relationship between the release of new financial information and stock returns does not include the requirement that all such

[29] Bush, Michael. "At a glance – Freddie Mac: A Poor 2Q07 Result and an indication that the US mortgage market will remain tough for some time yet," National Australia Bank Limited.

[30] Reuters "Freddie Mac hit by huge loss, says needs capital" 11/20/2007

announcements contain information that would cause the value of the stock to move a great deal, or in statistical terms, move a stock's value more than two-standard deviations from its expected returns based on a market model. Such a requirement would impose a strong restriction on the magnitude of the news (i.e., a requirement that all news releases contain information that would move the equity value by a large amount, and large enough to be deemed a "statistically significant" change in value) rather than on the degree of market efficiency. That said, two of the six earnings announcement events produce abnormal returns on Freddie Mac stock that are strongly statistically significant (both with p-values that are essentially equal to zero), three additional events have results that are close to traditional and accepted measures of statistical significance with one-tailed p-values above 10% but below 20% (10.7%, 11.9%, and 16.3%), and the event with weak individual abnormal-return statistical significance results (p-value of 44.2%) is the event with arguably the least amount of unexpected news.

28. As a way to assess statistical significance of our test results, we conduct a joint test on whether all of the event days are insignificant as a group. Tests such as the F-test[31] and the Chi-squared test[32] summarize the likelihood that one might observe a similar set of days, and more specifically a similar set of abnormal returns on the earnings release days, under the assumption that the returns on the event days in question are not exceptional or special, relative to the estimation period data and market model. These tests provide a means to incorporate information that multiple days may be individually

[31] Peter Kennedy, "A Guide to Econometrics," 6th Edition, Blackwell Publishing, Malden, MA, 2008.

[32] John E. Freund, "Mathematical Statistics," 5th Edition, Prentice Hall, Englewood Cliffs, NJ, 1992.

close to statistically significant, such as in our sample. Observing several days that are individually close to conventional significance levels (p-values above but close to 10%) should be unlikely if those days are truly typical based on the data. Review of market commentary regarding the earnings release announcements demonstrates five of the earnings release events reviewed above provided the market with some degree of unexpected information related to the value of Freddie Mac common stock. Using a standard F test and the five events with news that differed from market expectations – 10/3/06, 1/5/07, 6/14/07, 8/30/07, and 11/20/07 – we can easily reject the null hypothesis that all five of these events were insignificant (with a p value of less than 0.001). Alternatively, using a Chi-Squared test, we can easily reject the null hypothesis that the total variation in returns over the five event days was typical (with a p value less than 0.001). Furthermore, the large negative return on the final event date, 11/20/07, is not the sole source of the significance in either of these tests. One can also reject the null hypothesis that the other four days are all insignificant or had typical total variation (with a p value that is also less than 0.001). The results of both the F-test and the Chi-Square test support the idea that Freddie Mac stock reacted to the information in the earnings releases, and the statistical results support the hypothesis that Freddie Mac stock had a cause and effect relationship between unexpected financial releases and an immediate response in the stock price.

29. This examination of the stock price reaction around Freddie Mac's announcements of financial results shows that Freddie Mac common stock reacted quickly and logically to the arrival of new, material information regarding the value of Freddie Mac common stock, which supports the existence of a "cause-and-effect relationship between

unexpected corporate events or financial releases and an immediate response in the stock price." The price reactions of Freddie Mac common stock on the dates examined above support a finding that the market for Freddie Mac common stock was (semi-strong form) efficient.

vi) Market Capitalization

30. Market capitalization of a company "may be an indicator of market efficiency because there is a greater incentive for stock purchasers to invest in more highly capitalized corporations."[33] As of the beginning of the class period, Freddie Mac's market capitalization was approximately $38.9 billion. This is more than six times larger than the average market capitalization of companies listed by the NYSE Group.[34] The *Cheney* and *Krogman* decisions state that market capitalization in the top sixty percent of the relevant sample group weighs in favor of market efficiency. Freddie Mac's large market capitalization supports the presumption that the market for Freddie Mac's stock was (semi-strong form) efficient.

vii) Bid-Ask Spread

31. The *Krogman* decision states that a "large bid-ask spread is indicative of an inefficient market, because it suggests that the stock is too expensive to trade."[35] In *Krogman*, a spread equal to 5.6% of closing price suggested market inefficiency.[36] In *Cheney*, an

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[33] *Krogman*, 202 F.R.D. at 478 (citing *O'Neil v. Appel*, 165 F.R.D. 479,503 (W.D. Mich. 1996)).

[34] In August 2006, the combined market cap of NYSE Group companies was $15.7 trillion. 2,764 companies were listed by the NYSE Group in 2006. $15.7 trillion/2,764 = $5.7 billion.

Internet Source: http://www.nyxdata.com/nysedata/asp/factbook/viewer_interactive.asp?hidCategory=5

[35] *Krogman*, 202 F.R.D. at 478.

[36] *See id.* at 478.

average daily relative bid-ask spread of 2.4% weighed in favor of market efficiency.[37] I have calculated the bid-ask spread in two ways. First I have calculated the average daily closing bid-ask spread as reported by Bloomberg. Over the entire class period, the average daily closing bid-ask spread for Freddie Mac common stock as a percentage of the closing price was 1.7%, below the average in *Cheney*, and supportive of market efficiency.[38] I have also calculated the bid-ask spread using the Corwin-Schultz estimator. The Corwin-Schultz estimator calculates the bid-ask spread using data on closing, high, and low transaction prices of a stock.[39] The Corwin-Schultz estimator calculates the bid-ask spread of Freddie Mac common stock during the class period as 0.57%, also well below the average in *Cheney*. These measures of the bid-ask spread for Freddie Mac stock show that Freddie Mac stock was not expensive to trade during the class period, and this finding supports the presumption that the market for Freddie Mac common stock was (semi-strong form) efficient.

viii) "Float" Percentage

32. The *Krogman* decision observes that "[i]n determining efficiency, courts also consider the percentage of shares held by the public, rather than insiders."[40] In the *Cheney* decision, 5% of shares outstanding held by insiders (i.e., a 95% float) was taken as supportive of the presumption of market efficiency. As of April 2, 2007, Freddie Mac

[37] *Cheney*, 213 F.R.D. at 501.

[38] This is the average of the bid-ask spread across the 314 days with active closing bids and asks reported by Bloomberg. On 16 days during the class period Bloomberg reports Freddie Mac common stock closed with a 'stub' bid more than 30% lower than the lowest executed trade of the day. These days are excluded from the average calculation. The SEC defines 'stub' bids as bids that are so far away from the prevailing market that they are not intended to be executed. (See SEC Release No. 34-63255). As defined, no trades were executed at stub bids during the class period.

[39] Corwin, S. A. and Schultz, P. (2012), A Simple Way to Estimate Bid-Ask Spreads from Daily High and Low Prices. *The Journal of Finance* 67: 719–760.

[40] *Krogman*, 202 F.R.D. at 478 (citing *O'Neil*, 165 F.R.D. at 503).

had a float percentage of 99.9%. This high float percentage supports the presumption that the market for Freddie Mac common stock was (semi-strong form) efficient during the class period.

Conclusion

33. In conclusion, I find the *Cammer* and *Krogman* factors examined above provide persuasive evidence of the (semi-strong form) efficiency of the market for the Freddie Mac common stock over the class period examined. It is my opinion the market for the Freddie Mac common stock was semi-strong form efficient during the class period in this matter.

VI. Documents considered

34. I reviewed numerous news and analyst reports on Freddie Mac over the class period of 8/1/2006 – 11/20/2007. I also read the Third Amended Complaint filed February 28, 2012 in this matter. I reviewed the financial data described above. A complete compilation of the set of news stories and analyst reports provided to me will promptly be provided to defense counsel in electronic format.

VII. Potential Additional Analyses to Perform

35. My opinions are based on the information received and available as of the date of my report. I will consider any additional documents or information that becomes available after the date of this report. I will consider issues raised at my deposition. Any of this

additional information may cause me to change my opinions, and I may supplement this report accordingly.

VIII. Compensation

36. I am being compensated at a rate of $500 per hour. Those assisting me in my work on this matter, Kevin Jewell and Professor Jay Hartzell, are being compensated at rates of $250 and $500 per hour, respectively.

I declare under penalty of perjury, 28 U.S.C. sec. 1746, that the foregoing is true and correct this 16th day of August, 2012 in Austin, Texas.

Greg Hallman

CERTIFICATE OF SERVICE

I hereby certify that on August 17, 2012, a copy of the foregoing "EXPERT REPORT OF DR. GREG HALLMAN" was filed electronically. Notice of this filing will be sent by operation of the Court's CM/ECF system to all parties indicated on the electronic filing receipt. This filing may be accessed through the Court's CM/ECF system.

/s/ Joseph T. Deters
Joseph T. Deters (0012084)